Aloha

2018 Update

Fuel Tank Advisory Committee (FTAC)

November 1, 2018

Navy Update on
Field-Constructed Tanks

Review of Sites

Temporarily out of use:

- Kuahua Peninsula (a.k.a. Diesel Purification Plant)

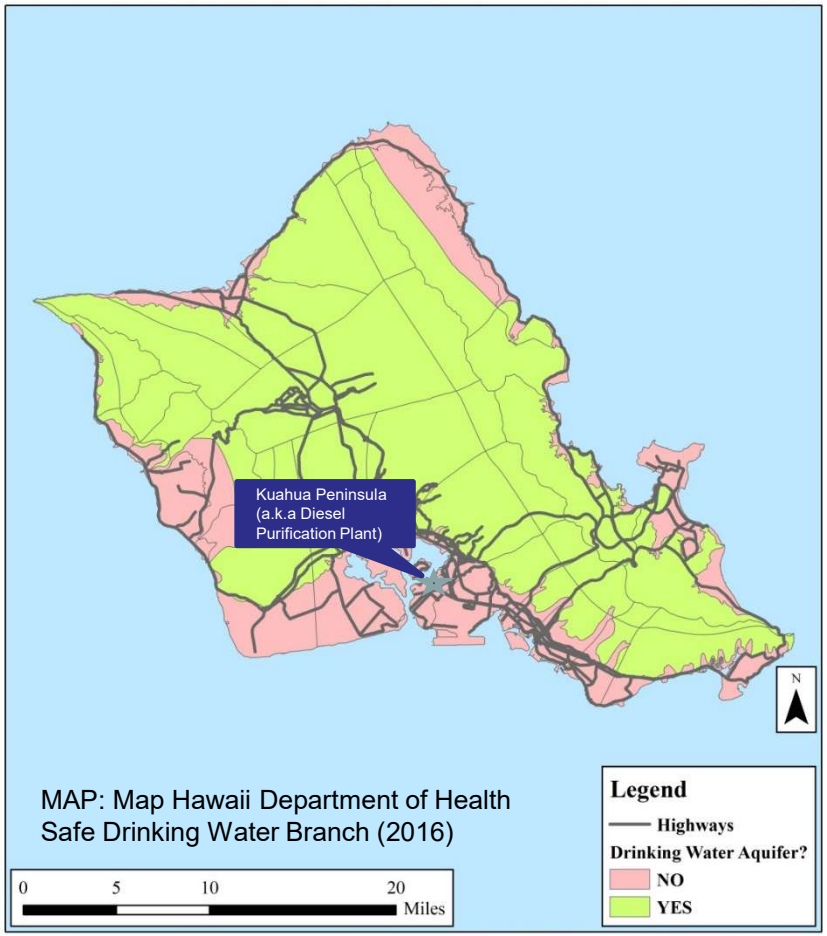
Permanently out of use:

- Hickam POL Annex (Kipapa)
- Hickam POL Annex (Waikakalaua)

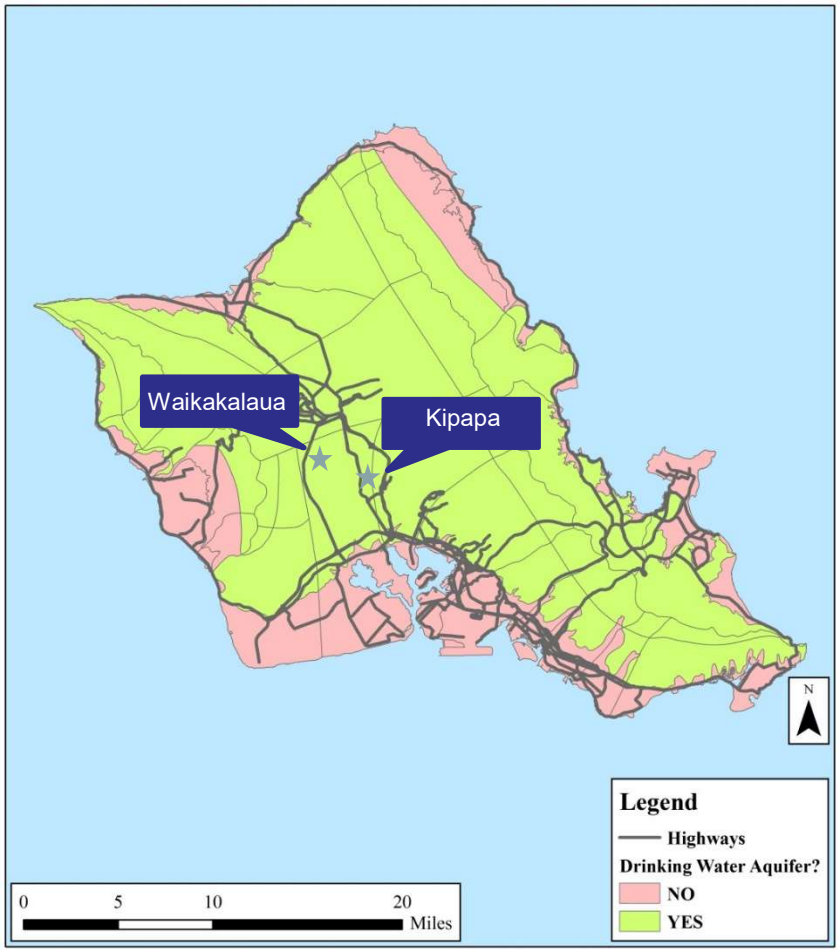
Currently in use:

- Pacific Missile Range Facility
- Red Hill Underground Storage

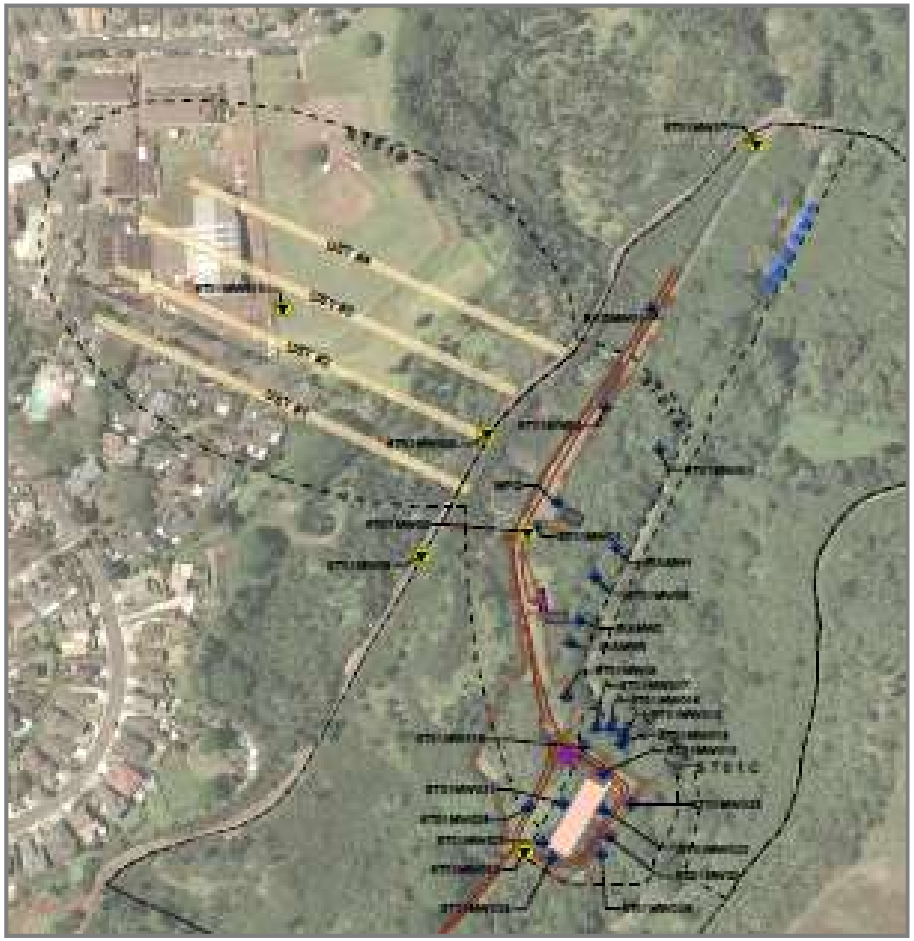
Kuahua Peninsula
(a.k.a Diesel Purification Plant)



Hickam POL Annexes



Hickam POL Annex - Kipapa



Answers to Outstanding Questions From Last Meeting

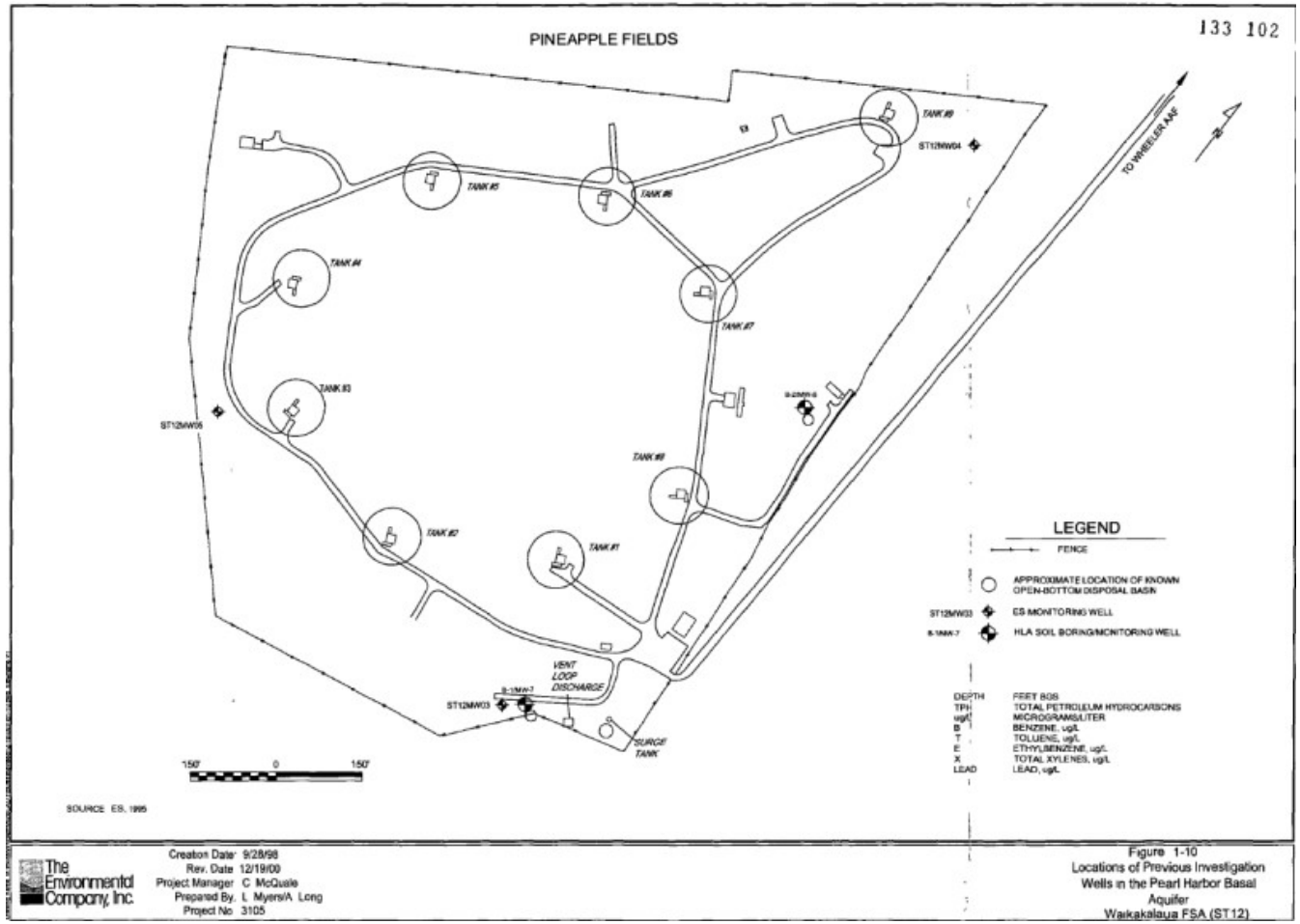
What are TPH cleanup goals at Hickam POL Annex - Kipapa?

Compound of Concern	Soil (mg/kg)	Shallow Groundwater (µg/l)	Soil Gas (µg/m^3)
TPH-d	500/500	5,000/5,000	1,180,000/9,940,000
TPH-g	1,240/4,520	150,000/150,000	1,180,000/9,940,000

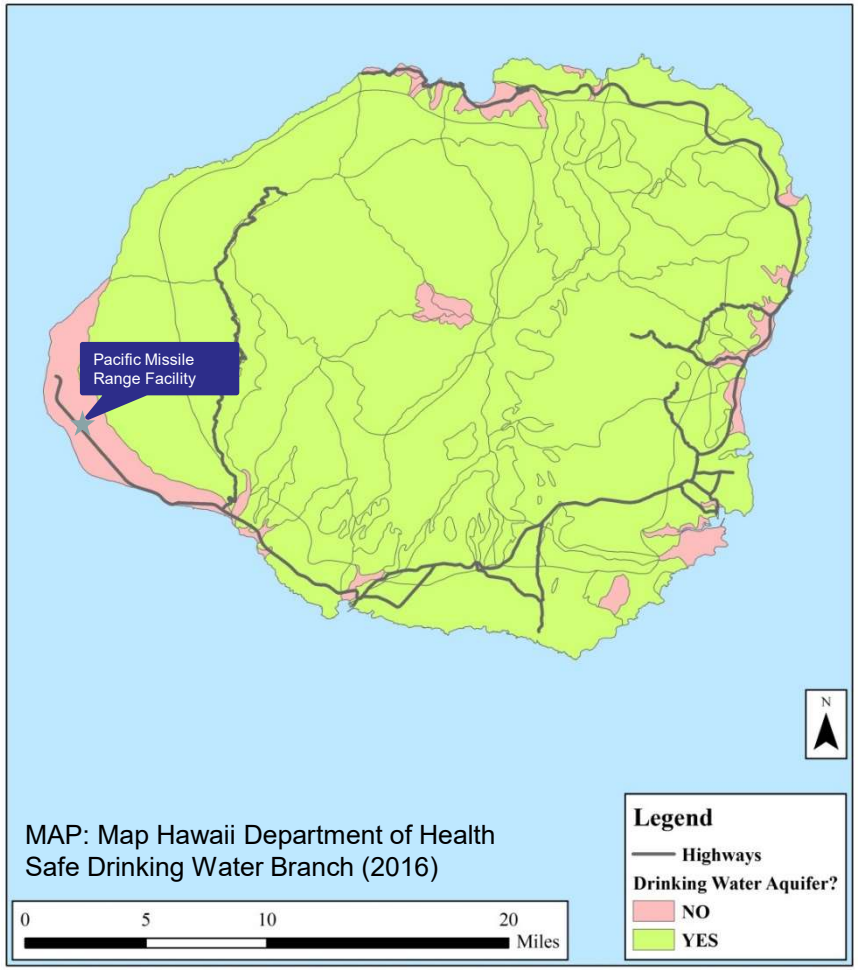
Notes:

1. TPH-d: Total Petroleum Hydrocarbons-diesel (currently 47-180 µg/l)
2. TPH-g: Total Petroleum Hydrocarbons-gasoline (currently 160-3,100 µg/l)
3. First number indicates max contaminant level (MCL) for residential occupancy. Second number indicates MCL for industrial occupancy.
4. Ultimate goal is reducing MCL below residential occupancy requirements. Intermediate goal is reducing MCL below industrial occupancy requirements. Achieving industrial occupancy MCL still requires monitoring. No current estimate for completion of cleanup.
5. 17 monitoring wells sampled annually.

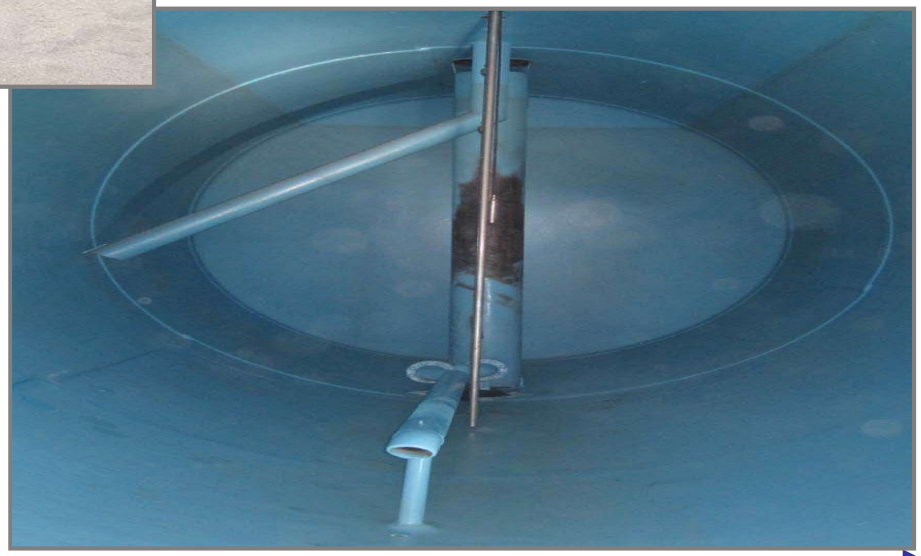
Hickam POL Annex - Waikakalua



Pacific Missile Range Facility



Pacific Missile Range Facility



Navy and DOH Update on the Administrative Order on Consent (AOC) at the Red Hill Bulk Fuel Storage Facility

Answers to Outstanding Questions from Last Meeting

When Red Hill Surge Tanks last underwent American Petroleum Institute (API) inspection, how many areas were found requiring repairs?

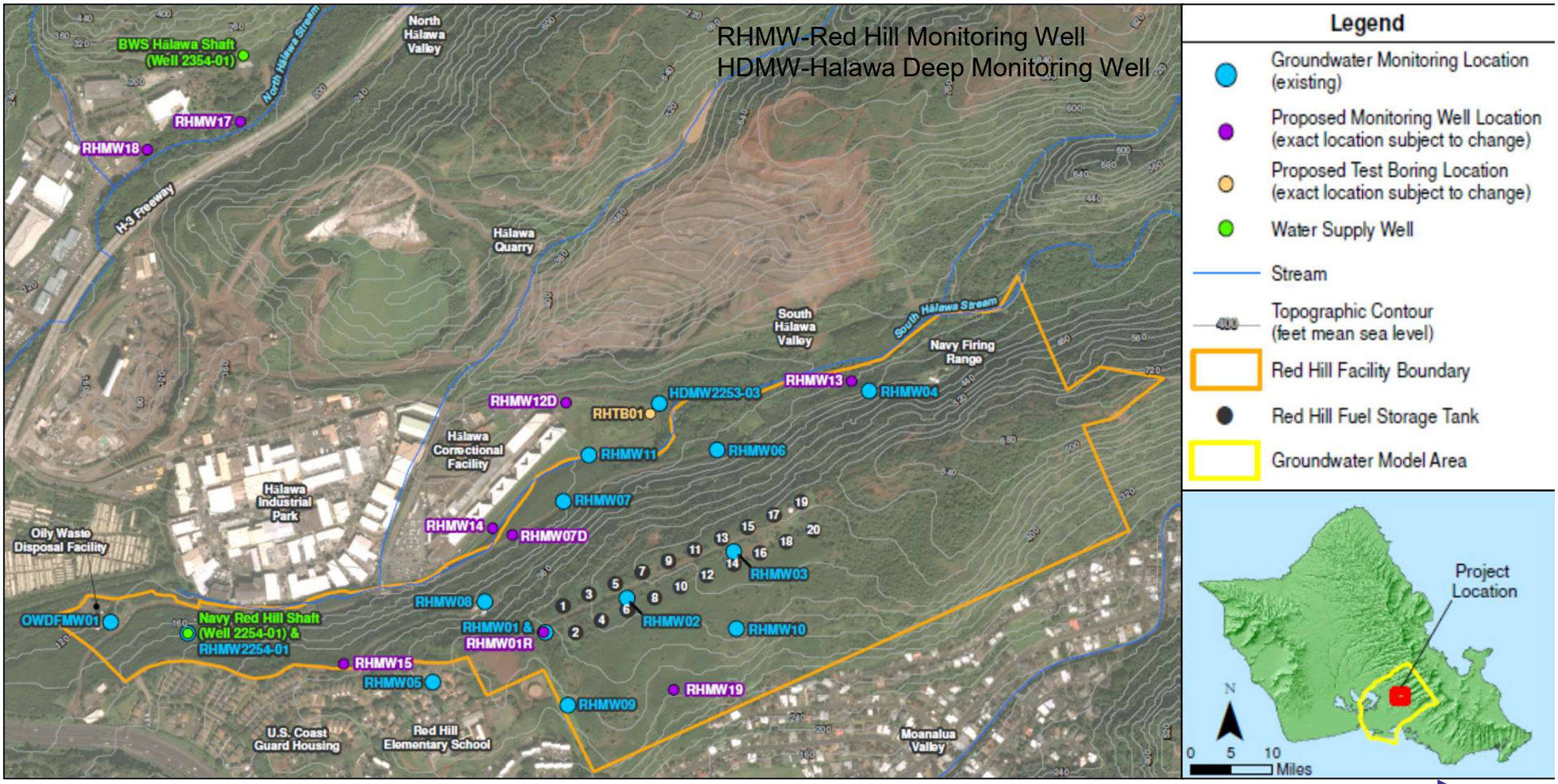
- API 653 inspections last completed on all 4 Red Hill Surge Tank in 2004.
- 19 areas identified for repair during inspection.
- All repairs successfully completed and passed testing.
- Each surge tank has successfully passed tank tightness testing since repairs completed.
- Next cycle of cleaning, inspection, and repairs (CIR) recently began.

Red Hill Bulk Fuel Storage Facility
Update on AOC Actions

Actions completed since last meeting

- **FY18 Tank Tightness Testing**
- **Coupon Removal**
- **Alternative Location Study**
- **Tank Upgrade Alternatives Report**
- **Establishment of Groundwater Modeling Working Group**
- **Installation of Monitoring Well #11**
- New Release Detection Alternatives Report
- Scope of Work for Destructive Testing
- Groundwater Monitoring Split Sampling with EPA
- Seismic Geologic Survey
- Various Natural Attenuation Studies
- Regional Synoptic Water Level Study
- Conceptual Site Model Report
- Groundwater Protection and Evaluation Considerations Report

Groundwater Monitoring Wells



Red Hill Bulk Fuel Storage Facility
Regulatory Oversight and Approvals

DOH/EPA approvals since last FTAC meeting:

- Tank Upgrade Alternatives Report (May, 2018)
- Destructive Testing Plan (June, 2018)
- Release Detection Alternatives Report (August, 2018)

Red Hill Bulk Fuel Storage Facility
Update on AOC Actions

Actions scheduled for completion prior to next meeting:

- DoD Strategic Fuel Storage/Distribution Analysis Study
- Tank Upgrade Alternative Decision Document
- Release Detection Decision Document
- Destructive Testing Results Report
- Continued Execution of Long-term Groundwater and Soil Vapor Monitoring
- Groundwater Flow Model Report
- Continued Execution of Regional Synoptic Water Level Study
- Investigation and Remediation of Releases Report
- Installation of Additional Monitoring Wells and Test Boring
- Contaminant Fate and Transport Modeling Report
- Quantitative Risk and Vulnerability Assessment-Phase 1
- Semi-annual Tank Tightness Testing

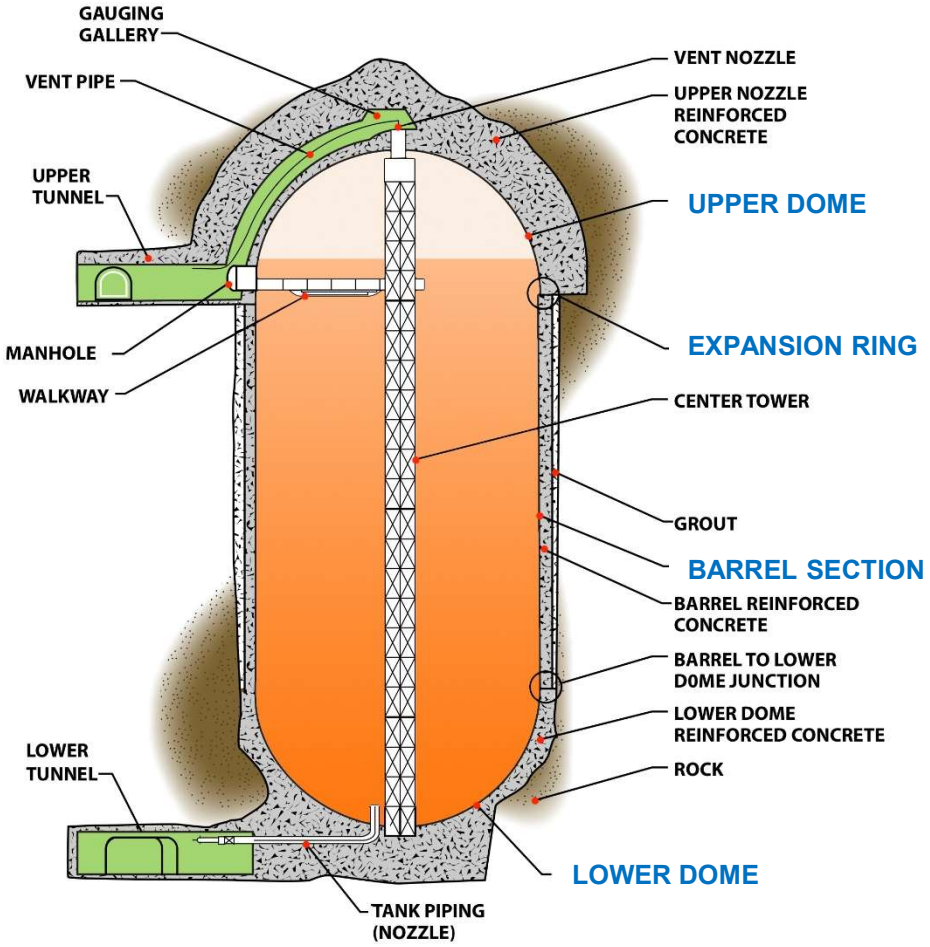
Red Hill Bulk Fuel Storage Facility
Current Projects

- Continue with Clean, Inspect and Repair Program for Tanks 5, 13, 14, and 17.
- Begin Clean, Inspect and Repair Program for Tanks 4 and 18 after above tanks returned to service.

Destructive Testing Way Ahead

- Laboratory analysis used to validate present non-destructive technology used to determine liner thickness.
- Navy awaiting results of coupon lab analysis.
- Testing is only 1st phase of study.
- Next phase compares lab analysis results with data from non-destructive evaluation.
- AOC requires results of comparisons submitted by middle of 2019.
- Navy awaiting results of comparison before developing any conclusions.

Tank Diagram



Coupon Location Summary

Region of Tank	No. of Coupons	No. of Areas Already Identified for Repair
Upper Dome	1	1
Expansion Ring	2	1
Barrel Section	6	3
Lower Dome	1	0
Total	**10**	**5**

Coupon #1

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**

Coupon #2

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**

Coupon #3

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is unnecessary
- **Expect lab measurements to validate NDE measurements**

Coupon #5

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**

Coupon #6

Initial indications:

- No Non Destructive Evaluation performed
- Control sample only

Coupon #7

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**

Coupon #8

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is unnecessary
- **Expect lab measurements to validate NDE measurements**

Coupon #10

Initial indications:

- Screening scan indicates repair is unnecessary
- **Expect lab measurements to validate NDE measurements**

Coupon #A1

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**

Coupon #A2

Initial indications:

- Screening scan indicates repair is <u>unnecessary</u>
- **Expect lab measurements to validate NDE measurements**

Tank Upgrade Alternatives

Alt	Description	Pros	Cons	Est Cost (millions)-ROM
1A	Restoration of Existing Tank	• Proven construction method • Interior barrier can be inspected/repaired	• Single wall construction • Requires leak detection system	$180-$450
1B	Restoration of Existing Tank plus Interior Coating	• Proven construction method • Interior barrier can be inspected/repaired	• Single wall construction • Requires leak detection system • Coating challenges due to tank size	$450-$1,800
1D	Remove existing Liner, Install New Steel Liner with Interior Coating	• New steel liner • Interior barrier can be inspected/repaired	• Single wall construction • Requires leak detection system • Construction methods high risk • Risk of compromising structural concrete support for tank	$1,800-$4,500
2A	Composite Tank (Double Wall) Carbon Steel, with Interior Coating	• Double wall/adds carbon steel liner • Provides secondary containment • Interior barrier can be inspected/repaired	• Reduced capacity • Construction methods high risk • Secondary containment and exterior of primary containment cannot be inspected/repaired	$500-$2,000
2B	Composite Tank (Double Wall) Stainless Steel	• Stainless steel liner provides better corrosion protection • Provides secondary containment • Interior barrier can be inspected/repaired	• Reduced capacity • Construction methods high risk • Secondary containment and exterior of primary containment cannot be inspected/repaired	$2,000-$5,000
3A	Tank within a Tank (Carbon Steel), Full Interior and Exterior Coating	• New carbon steel tank • Provides secondary containment • Space between tanks can be inspected/repaired	• Lowest capacity • Construction methods high risk	$2,000-$5,000
ALS	New Tanks (Cut and Cover including remediation of existing site)	• New facility • Provides secondary containment	• Recommended site still located above aquifer	$4,000-$10,000

Red Hill Bulk Fuel Storage Facility
Future Work Timetable

Subject to approval of regulatory agencies, Navy plans to implement the following recommended BAPT:

- Continue using AOC-approved CIR program and implement continued enhancements and improvements where practicable.
- Conduct pilot project to apply coating to entire interior of tank and restore or abandon nozzles.
- Install leak detection system for all tanks currently in service or proposed to be returned to service.

Red Hill Bulk Fuel Storage Facility
Future Work Timetable

Why is this BAPT?

- 2014 release is first reported release to the environment since the introduction of the underground storage tank regulations in 1988.
- Solely due to human error, not from tank deterioration.
- All tanks passing annual tank tightness tests. Test frequency increasing to semi-annually in 2019.
- Current maintenance practices effectively measure tank liner thickness and identify repair locations well before they are problems.
- QRVA noted highest risk of large release to environment is nozzles and lower access tunnel, not tanks.
- Proposed BAPT focuses on rapid identification if release occurs to minimize volume.
- Improved release detection (system of systems) and response procedures reduce volume of potentially released fuel to levels well below that endangering drinking water.
- Other alternatives involve construction risk, do not reduce risk to most vulnerable elements in facility i.e. the lower access tunnel and the nozzles, and are costly.
- Navy will revisit decision if new information suggests prior to 5-year mandatory review.

Summary

- Water continues to be safe to drink
  - Routine water sampling/testing
- Tanks pass annual tank tightness tests
- AOC is working
  - Navy/DLA is accountable
  - Navy/DLA has met/meeting all AOC deadlines
- CIR program in progress for Tanks 13, 14 and 17
- Tank 5 warranty repair work complete
  - 2nd full inspection with improved quality assurance complete. Waiting on award to complete repairs.
- TUA and Release Detection Decision Document scheduled for delivery by end of 2018

Questions